REMARKS

The final Office Action dated September 3, 2008, and the patents and publications relied on therein have been carefully reviewed, and in view of the above changes and following remarks reconsideration and allowance of all the claims pending in the application are respectfully requested.

Claims 1-15 stand finally rejected. By this Amendment, claim 15 has been amended. Claims 1-15 remain pending.

The Rejection Under 35 U.S.C. § 112, Second Paragraph

Claim 15 stands finally rejected under 35 U.S.C. § 112, second paragraph, as indefinite for failing to particularly point out and distinctly claim the subject matter regarded as the invention.

Applicants have amended claim 15 to generally improve its form in accordance with U.S. patent law. In particular, Applicants have amended claim 15 so that claim 15 now comprises a method comprising receiving an amount of data corresponding to n data information disk sectors, and generating c redundant information disk sectors based on the received data. Support for this amendment can be found throughout the specification, for example, at least in originally filed claim 15, at paragraph [25], lines 1-7, and in Figure 3.

Applicants respectfully request that the Examiner should enter the amendments to claim 15 because the amendments do not raise new issues that would require further consideration and/or search, the amendments do not raise an issue of new matter, the amendments place the application in better form for appeal by materially reducing and simplifying the outstanding issues, and no new claims are presented without canceling a corresponding number of claims. Regarding raising new issues that would require further consideration and/or search, Applicants respectfully submit that the Examiner has already raised the present outstanding issue, and the amendments to claim 15 respond to the issue raised by the Examiner without requiring any further consideration and/or search.

Consequently, Applicants respectfully request that the Examiner withdraw this rejection.

The Rejection Under 35 U.S.C. § 103(a) Over Servi

Claim 1 stands finally rejected under 35 U.S.C. § 103(a) as unpatentable over Servi et al. (Servi), U.S. Patent Application Publication No. 2004/0107400 A1.

Applicants respectfully traverse this rejection. Applicants still respectfully submit that the subject matter according to claim 1 is patentable over Servi because Servi does not disclose or suggest the claimed subject matter of claim 1. Further, Applicants still respectfully submit that the Examiner's proffered line of reasoning for modifying Servi is still not convincing. Moreover, the Examiner's proffered modification of Servi impermissibly changes the principle of Nishida.

Regarding the issue of Servi not disclosing or suggesting the claimed subject matter of claim 1, the Examiner asserts that Servi "teaches ... associating n data information sectors (Fig. 11, D 1-10; paragraph 44) with c redundancy information sectors (Fig. 1, P 1-6; paragraphs 45, 46), the c redundancy information sectors being based on the n data information sectors, and n and c being integer value numbers greater than zero ... ." (See final Office Action dated September 3, 2008, page 3, lines 22-25.) Paragraphs [44] and [45] of Servi indicate that a data point D represents a data symbol that includes one or more bits of a data set, and that a parity point represents a parity symbol that includes one or more bits, so the Examiner appears to be equating a Servi data point D to a claimed data information sector, and a Servi parity point P to a claimed redundancy information sector. The Examiner further indicates that Figure 1 of Servi shows an integer number of Servi data points D1-D10 and an integer number of Servi parity points P1-P6. Accordingly, the Examiner's assertion that the Servi data points D correspond to the claimed data information sectors and that the Servi parity points P correspond to the claimed redundancy information sectors appears to have merit – until the Servi disclosure is examined a little closer.

Servi relates to a technique for protecting data that uses points in a bipartite graph that have been selected to have a degree distribution that has been found to be particularly advantageous. (See Service, paragraph [0038].) According to Servi, the parity points are selected to have a degree distribution with very few (and preferably no) low degree parity points. (See Servi, paragraphs [0038]-[0040], and [0066].) Servi discloses that for a parity set of a given size, it has been appreciated that better performance can be achieved by allocating parity points to have a relatively higher degree. (See Servi, paragraph [0066].)

Servi discloses one embodiment that "enables a user to specify the number of bits in the data set, as well as the maximum number of parity bits that the user is willing to support." (See Servi, paragraph [0073].) In particular, Servi discloses that Tables 5-8 may be used as a guide for selecting appropriate values. (See Servi, paragraph [0077].) Tables 5-8 show that to achieve a relatively small expected percentage loss of data bits, parity points having a relatively high degree should be used. For example, in Table 5, for a 1 % expected loss for a data set of 5040 bits, the parity degree of the parity bits should range from 160 to 200. According to Servi, the number of parity bits for this particular percentage loss is 130 bits. For an expected 10 % loss of 5040 data bits, the parity degree of the parity bits should be range from 18 to 25 bits. The number of parity bits for an expected 10 % lost of data bits is 860. Tables 6-8 show similar information.

To consider the applicability of the Servi technique to the claimed subject matter, consider ten (10) disk sectors in which each disk sector size is 512 bits for a total of 5120 bits. Note that the number of total bits – 5120 – is an integer. If the Servi example in Table 5 of 5040 bits is scaled to correspond to the ten disk sectors of 5120 bits (i.e., using a scale factor of approximately 1.01590), none of the number of Servi parity bits for the exemplary percentage loses (i.e., 1 %, 10 %, 20 %, 50%, and 75 % loses) scale to be an integer value.

Plainly, Servi is inapplicable to the subject matter of claim 1, and the Examiner's assertion that the Servi data points D correspond to the claimed data information sectors and that the Servi parity points P correspond to the claimed redundancy information sectors has no merit. That is, a Servi data point D does not correspond to a claimed data information sector, and a Servi parity point P does not correspond to a claimed redundancy information sector. Moreover, the Examiner has not used any of the disclosed Servi techniques (i.e., Tables 1 and/or 4 and Tables 5-8) for generating parity bits based on a specified number of data bits such that c redundancy information disk sectors are generated based on n data information disk sectors, and such that n and c are integer value numbers greater than zero. Applicants respectfully invite the Examiner to prove in the next Communication how any of the techniques disclosed by Servi can be used to generate parity bits for a selected number of data bits that yields c redundancy information disk sectors that are based on n data information disk sectors such that n and c are integer value numbers greater than zero. If the Examiner does not respond to this invitation in the next Communication, Applicants will consider the Examiner's lack of response to be an

admission by the Examiner that the Examiner cannot prove that any of the techniques disclosed by Servi to generate parity bits for a selected number of data bits that yields c redundancy information disk sectors that are based on n data information disk sectors such that n and c are integer value numbers greater than zero.

Accordingly, Servi does not disclose a method comprising associating n data information disk sectors with c redundancy information disk sectors, the c redundancy information disk sectors being based on the n data information disk sectors, and n and c being integer value numbers greater than zero. Further, Servi does not suggest a method comprising associating n data information disk sectors with c redundancy information disk sectors, the c redundancy information disk sectors being based on the n data information disk sectors, and n and c being integer value numbers greater than zero.

Regarding the issue of the Examiner's proffered line of reasoning for modifying Servi still not being convincing, Applicants respectfully submit that:

> "To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references." *Ex parte Clapp*, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985). (See, also, MPEP §§ 706.02(j) and 2144.)

In the present instance, the Examiner still does not state that Servi expressly or impliedly suggests the claimed subject matter. Consequently, in order to support the present rejection, the Examiner's line of reasoning must be convincing as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references.

Applicants respectfully submit that the Examiner admits "Servi did not explicitly mention that the sectors should be 'disk sectors' (e.g., RAID parity sectors)." (See final Office Action dated September 3, 2008, page 4, lines 4-5.) The Examiner then asserts that "it would have been obvious to one having ordinary skill in the art at the time the invention was made to keep the parity data or [sic] Servi in dedicated disk sectors (as opposed to 'tracks' or 'clusters' or 'blocks') since (1) sectors were a well recognized disk partition size at the time of the invention (sectors are basically small sections of tracks) and (2) the Servi system utilized disks." (See final Office Action dated September 3, 2008, page 4, lines 5-9.)

Applicants respectfully submit that the Examiner's assertion regarding the obviousness of the subject matter of claim 1 still ignores the fact that Servi teaches away from subject matter of claim 1, as demonstrated above. Applicants still respectfully submit that none of the techniques disclosed by Servi to generate parity bits for a selected number of data bits yields c redundancy information disk sectors that are based on n data information disk sectors such that n and c are integer value numbers greater than zero. Moreover, Applicants still respectfully submit that a person of ordinary skill in the art would simply not use or modify the Servi technique to obtain the subject matter of claim 1 because in order to use or modify Servi to become the subject matter of claim 1 (disregarding for the moment the fact that Servi cannot be modified to be the subject matter of claim 1), common sense dictates that the high expected percentage loss of data bits provided by Servi would be plainly unacceptable to one of ordinary skill in the art.

It is also respectfully noted that in order to modify Servi to become the subject matter of claim 1, the disclosure of Servi must be ignored, thereby changing the principle of operation of Servi. Applicants respectfully submit that if the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959). (See, also, MPEP § 2143.01.)

The Examiner uses a syllogism to dismiss Applicants' arguments demonstrating the patentability of claim 1 over Servi. The major premise of the Examiner's syllogism is "as presently written, the claims 'storage unit' may include in its scope the entire RAID array." (See final Office Action dated September 3, 2008, page 8, lines 21-22.) The Examiner then asserts as a minor premise and conclusion that "c=1, any RAID system that has any parity in it whatsoever would teach claim 1 is entirely correct." (See final Office Action dated September 3, 2008, page 8, lines 23-24.)

Regarding the Examiner's major premise, the Examiner asserts at page 6, lines 1-2, of the final Office Action dated September 3, 2008, that "[s]ince applicant has not placed any limitation on what constitutes a "storage unit" in the claims, this feature must be given its broadest possible limitation … ."[1] Applicants respectfully submit that the Examiner's assertion regarding the

[1] Applicants respectfully note that in the Office Action dated January 10, 2008, at page 10, lines 6-8, and in the final Office Action dated September 3, 2008, at page 8, lines 15-17, the Examiner states that "the claims must be given their broadest reasonable interpretation". This statement, nevertheless, is expanded by the Examiner into the concept that the "storage unit" in the claims "must be given their broadest possible limitation". (See final Office

interpretation of the claimed "storage unit" is contrary to the "Broadest Reasonable Interpretation" standard set forth in MPEP § 2111, which states:

> "The Patent and Trademark Office ("PTO") determines the scope of claims in patent applications not solely on the basis of the claim language, but upon giving claims their broadest reasonable construction 'in light of the specification as it would be interpreted by one of ordinary skill in the art.'" *In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d 1359, 1364[, 70 USPQ2d 1827] (Fed. Cir. 2004).

Applicants respectfully submit that the Examiner's major premise is without basis because (1) one of ordinary skill in the art would interpret the claimed "storage unit" in a manner that would NOT "include in its scope the entire RAID array," and (2) the Examiner's own interpretation of the scope of the claimed "storage unit" is inconsistent throughout the final Office Action dated September 3, 2008.

Applicants respectfully submit that one of ordinary skill in the art would interpret the claimed "storage unit" to comprise a Hard Disk Drive (HDD), a Random Access Memory (RAM) storage device (both volatile and non-volatile), an optical storage device and/or a tape storage device. (See paragraph [26], lines 1-4, of the originally filed patent application.) Moreover, Applicants respectfully submit that one of ordinary skill in the art would interpret the claimed "RAID-configured storage system" to comprise a plurality of the claimed "storage units" because:

(1) claim 1, lines 2-3, sets forth such a concept;

(2) the specification describes an exemplary array 200 formed from six storage units, such as Hard Disk Drives (HDDs), arranged in a RAID 6 configuration (see paragraph [19], lines 1-2, and Figure 2 of the originally filed patent application);

(3) Table 2 of the originally filed patent application; and

(4) the subject matter of claims 2-6 and 10-12.

Regarding the Examiner's inconsistent interpretation of the scope of the claimed "storage unit," the Examiner acknowledges, on one hand, that claim 1 comprises a RAID-configured storage system having a plurality of storage units, but then on the other hand morphs the claimed storage unit so that it "may include in its scope the entire RAID array." That is, the Examiner

---

Action dated September 9, 2008, page 9, lines 1-3.) While such an expansion has the appearance of bolstering the Examiner's position, such an expansion is plainly contrary MPEP § 2111 and is, therefore, without basis.

takes the position that Servi discloses "a RAID-configured storage system having a plurality of storage units." (See final Office Action dated September 3, 2008, page 3, lines 19-21.) Then, the Examiner asserts that the "broadest possible limitation" of the claimed "storage unit" morphs the claimed "storage unit" into having a scope of the entire RAID array (see final Office Action dated September 3, 2008, page 8, lines 21-22), thereby completely ignoring claim 1 "as presently written." It must be noted that claim 1 comprises a method for protecting data stored in a RAID-configured storage system from uncorrectable media errors, such that the RAID-configured storage system has a plurality of storage units. (See claim 1, lines 1-3.)

It follows, then, that the Examiner's major premise is simply without basis and, therefore, an unreasonable interpretation of the scope of the claimed "storage unit." The Examiner's major premise does not make sense, particularly in light of the specification as it would be interpreted by one of ordinary skill in the art.

Regarding the Examiner's minor premise and conclusion, that is, "when c=1, any RAID system that has any parity in it whatsoever would teach claim 1", Applicants respectfully note that Applicants have already demonstrated that Servi teaches away from the claimed subject matter of claim 1. The Examiner has not rebutted Applicants' arguments other than to reassert the minor premise and conclusion. It is notable that the mere reassertion of the Examiner's minor premise and conclusion does not prove anything about the condition "when c=1".

Applicants still respectfully submit that no RAID system teaches claim 1. In particular, both a RAID 0 system and a RAID 1 system do not use parity. Consequently, a RAID 0 and/or a RAID 1 system simply cannot be "any RAID system that has any parity in it whatsoever" to which the Examiner refers. A RAID 2 system utilizes ECC disks on which a Hamming Code is written for each data word on a separate data disk. That is, RAID 2 system, the Hamming Code for each data word is written on an ECC disk that is separate from the disk on which the data word is written. Both a RAID 3 system and a RAID 4 system utilize a dedicated disk for parity. A RAID 5 system utilizes parity distributed among the disks of the RAID system, but the parity for a data set is not written to the same disks in which the data set is written. A RAID 6 system utilizes dual parity distributed among the disks of the RAID system, but the dual parity for a data set is not written to the same disks in which the data set is written. Thus, Applicants respectfully submit that none of the RAID systems to which the Examiner could be referring writes the n data information disk sectors with c redundancy information disk sectors on the same storage unit.

Applicants respectfully invite the Examiner to prove in the next Communication how "when c=1, any RAID system that has any parity in it whatsoever would teach claim 1" other than reasserting the statement. If the Examiner does not respond to this invitation in the next Communication, Applicants will consider the Examiner's lack of response to be an admission by the Examiner that the Examiner cannot prove that "when c=1, any RAID system that has any parity in it whatsoever would teach claim 1".

Further regarding the Examiner's line of reasoning used for modifying Servi, Applicants respectfully submit that the proffered line of reasoning is nothing more than a conclusory statement without support. "Rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness," See *In re Kahn*, 441 F. 3d 977, 988 (CA Fed. 2006) (cited with approval in KSR). As such, Applicants respectfully submit that the Examiner's line of reasoning for modifying Servi is still not convincing because the Examiner still has not provided a rational underpinning to support the proffered line of reasoning.

At page 8, lines 10-11, of the final Office Action dated September 3, 2008, the Examiner asserts that "applicant's remarks are not commensurate in scope with the language of the claims." Applicants respectfully submit that contrary to the Examiner's assertion, "applicant's remarks" are commensurate in scope with the language of the claims. In particular, Applicants have already demonstrated that using any of the techniques disclosed by Servi to generate parity bits for a selected number of data bits does not yield c redundancy information disk sectors that are based on n data information disk sectors such that n and c are integer value numbers greater than zero, a feature of claim 1.

Thus, Applicants respectfully submit that the Examiner still has not demonstrated (1) that the disclosed Servi techniques (i.e., Tables 1 and/or 4 and Tables 5-8) can be used for generating parity bits based on a specified number of data bits such that c redundancy information disk sectors are generated based on n data information disk sectors, and such that n and c are integer value numbers greater than zero, and (2) that the Examiner's statement that "any RAID system that has any parity in it whatsoever would teach claim 1" is still without basis.

Accordingly Applicants respectfully submit that it is still only by impermissible hindsight that the Examiner is able to reject claim 1 based on the modification of Servi. Servi does not

disclose or suggest the subject matter of claim 1. To modify Servi as proffered by the Examiner causes the principle of operation of Servi to be improperly modified. Further, the Examiner does not state that Servi expressly or impliedly suggests the claimed subject matter, and the Examiner provides an unconvincing line of reasoning for modifying Servi. Further still, Applicants respectfully submit that the proffered motivation for modifying Servi is a conclusory statement without any rational underpinning to support the line of reasoning. It is only by using Applicants' disclosure as a template that the Examiner is able to select particular features of Servi through a hindsight reconstruction of Applicants' claims to make the rejection.

Consequently, Applicants respectfully request that the Examiner withdraw this rejection and allow claim 1.

The Rejection Under 35 U.S.C. § 103(a) Over Servi In View of Kaneda

Claims 3, 8, 9, 13 and 14 stand finally rejected under 35 U.S.C. § 103(a) as unpatentable over Servi in view of Kaneda et al. (Kaneda), U.S. Patent No. 5,958,067.

Applicants respectfully traverse this rejection. Applicants still respectfully submits that the subject matter of any of claims 3, 8, 9, 13 and 14 is patentable over Servi in view of Kaneda because Kaneda does not cure the deficiencies of Servi with respect to claim 1, the base claim for each of claims 3, 8, 9, 13 and 14. In particular, Applicants respectfully submit that Kaneda does not cure the lack of Servi disclosing or suggesting the subject matter of claim 1, the Examiner's impermissible change of operation of Servi, and Kaneda does not cure the Examiner's unconvincing line of reasoning for modifying Servi.

Consequently, Applicants respectfully request that the Examiner withdraw this rejection and allow claims 3, 8, 9, 13 and 13.

The Rejection Under 35 U.S.C. § 103(a) Over Servi In View of Hetzler

Claims 2, 4-7 and 10-12 stand finally rejected under 35 U.S.C. § 103(a) as unpatentable over Servi in view of Hetzler et al. (Hetzler), U.S. Patent Application Publication No. 2005/0015700 A1.

Applicants respectfully traverse this rejection. Applicants still respectfully submits that the subject matter of any of claims 2, 4-7 and 10-12 is patentable over Servi in view of Hetzler because Hetzler does not cure the deficiencies of Servi with respect to claim 1, the base claim for

each of claims 2, 4-7 and 10-12. In particular, Applicants respectfully submit that Hetzler does not cure the lack of Servi disclosing or suggesting the subject matter of claim 1, the Examiner's impermissible change of operation of Servi, and Hetzler does not cure the Examiner's unconvincing line of reasoning for modifying Servi.

Consequently, Applicants respectfully request that the Examiner withdraw this rejection and allow claims 3, 8, 9, 13 and 13.

Claim 15

Applicants still respectfully submit that claim 15, which incorporates the features of claim 1, is patentable over the applied art for at least the same reasons that claim 1 is considered to be patentable over the applied art.

Consequently, Applicants respectfully request that the Examiner allow claim 15.

Applicants note that additional patentable distinctions between Servi, Kaneda and Hetzler and the rejected claims exist; however, the foregoing is believed sufficient to address the Examiner's rejections. Additionally, failure of Applicants to respond to a position taken by the Examiner is not an indication of acceptance or acquiescence of the Examiner's position. Instead, it is believed that the Examiner's positions are rendered moot by the foregoing and, therefore, it is believed not necessary to respond to every position taken by the Examiner with which Applicants do not agree.

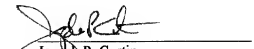
CONCLUSION

In view of the above amendments and arguments which present the claims in better form for consideration on appeal, it is urged that the present application is now in condition for allowance. Should the Examiner find that a telephonic or personal interview would expedite passage to issue of the present application, the Examiner is encouraged to contact the undersigned attorney at the telephone number indicated below.

It is requested that this application be passed to issue with claims 1-15.

Respectfully submitted,

Date: September 17, 2008



Joseph P. Curtin
Registration No. 34,571
1469 N.W. Morgan Lane
Portland, OR 97229-5291
(503) 296-8373
(503) 297-0452 (facsimile)